

Application No. 09/543,679
Supplemental Amendment dated July 20, 2004
Reply to Office Action of February 11, 2004

Amendments to the Claims:

1-91. (Canceled)

92. (Currently amended) An in vivo method of delivering a pharmaceutical composition to a subject target polynucleotide comprising administering to the airways of a said subject said a pharmaceutical composition comprising of a respirable or inhalable pharmaceutical composition having a particle size of 0.5 μ m to 10 μ m or 10 μ m to 500 μ m in size comprising at least one antisense oligonucleotide to said target polynucleotide effective to alleviate hyper-responsiveness to adenosine or increased levels of adenosine, or to alleviate bronchoconstriction, asthma, or lung allergy, wherein the oligonucleotide is 7 to 60 nucleotides long and up to and including about 15% or less adenosine, and the oligonucleotide is antisense to the initiation codon, the coding region of the 5' and 3' intron-exon junctions of a gene encoding a protein associated with hyper-responsiveness, to and/or increased levels of, adenosine, bronchoconstriction, asthma and/or lung allergy(ies) and/or inflammation, or being antisense to the corresponding mRNA thereof, the nucleic acid comprising one or more oligonucleotide(s), pharmaceutically or veterinarily acceptable salts of the oligonucleotide(s), mixtures of the oligonucleotide(s) or their salts.

93. (Previously Presented) The method of claim 92, wherein the antisense oligonucleotide comprises 10% or less adenosine.

94. (Previously Presented) The method of claim 93, wherein the antisense oligonucleotide comprises 5% or less adenosine.

95. (Previously Presented) The method of claim 94, wherein the antisense oligonucleotide comprises 2% or less adenosine.

96. (Previously Presented) The method of claim 95, wherein the antisense oligonucleotide is adenosine-free.

97. (Previously Presented) The method of claim 92, wherein the antisense oligonucleotide is 10 to 36 nucleotides long.

98. (Previously Presented) The method of claim 97, wherein the antisense oligonucleotide is 12 or 21 nucleotides long.

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99. (Previously Presented) The method of claim 92, wherein the pharmaceutical composition is administered by inhalation directly to the lung of the subject.

100-102. (Canceled)

103. (Previously presented) The method of claim 92, wherein the pharmaceutical composition further comprises a surfactant.

104. (Canceled)

105. (Previously presented) The method of claim 92, wherein the antisense oligonucleotide is administered in an amount of about 0.01 to about 150 mg/kg body weight.

106. (Previously presented) The method of claim 92, wherein said method is a prophylactic or therapeutic method.

107. (Currently Amended) The method of claim 92, wherein the antisense oligonucleotide is antisense to the initiation codon, the coding region or the 5' or 3' intron-exon junctions of a gene encoding braykinin bradykinin B2 receptor.

108. (Previously presented) The method of claim 92, wherein the antisense oligonucleotide comprises at least one mononucleotide is linked or modified by one or more of phosphorothioate, phosphorodithioate, methylphosphonate, phosphoramidate, boranophosphate, 3' - thioformacetal, triformacetal, carbamate, phosphotriester, formacetal, 2'-O-methyl, thioformacetal, 5'-thioether, carbonate, 5'-N-carbamate, sulfate, sulfonate, sulfamate, sulfonamide, sulfone, sulfite, sulfoxide, sulfide, hydroxylamine, methylene (methylimino), methyleneoxy (methylimino), methoxyethyl, C₅-substituted nucleotide and methyloxyethyl.

109. (Currently Amended) A pharmaceutical composition comprising at least one antisense oligonucleotide ~~that is antisense to a target polynucleotide and when delivered to the airways of a subject is effective to alleviate hyper responsiveness to adenosine or increased levels of adenosine, or to alleviate bronchoconstriction, asthma, or lung allergy,~~ wherein the oligonucleotide is 7 to 60 nucleotides long and up to and including about 15% or less adenosine, wherein the oligonucleotide is antisense to an initiation codon, a coding region or a 5' or 3' intron-exon junctions of a gene encoding an adenosine A₁, A_{2a}, A_{2b} or A₃ receptor or anti-sense to their respective mRNA thereof, wherein said pharmaceutical composition is of a respirable or inhalable particle size of 0.5 μ m to 10 μ m ~~or 10 μ m to 500 μ m~~ in size and comprises pharmaceutically and veterinarily acceptable

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salts of the oligo(s) or mixtures thereof and comprises a surfactant that may be operatively linked to the nucleic acid.

110. (Previously presented) The pharmaceutical composition of claim 109, wherein the antisense oligonucleotide comprises 10% or less adenosine.

111. (Previously presented) The pharmaceutical composition of claim 110, wherein the antisense oligonucleotide comprises 5% or less adenosine.

112. (Previously presented) The pharmaceutical composition of claim 111, wherein the antisense oligonucleotide comprises 2% or less adenosine.

113. (Previously presented) The pharmaceutical composition of claim 112, wherein the antisense oligonucleotide is adenosine-free.

114. (Previously presented) The pharmaceutical composition of claim 109, wherein the antisense oligonucleotide is 10 to 36 nucleotides long.

115. (Previously presented) The pharmaceutical composition of claim 114, wherein the antisense oligonucleotide is 12 or 21 nucleotides long.

116-119. (Canceled)

120. (Previously presented) The pharmaceutical composition of claim 109, wherein the pharmaceutical composition further comprises a surfactant.

121-123. (Canceled)

124. (Currently Amended) The pharmaceutical composition of claim 109, wherein the antisense oligonucleotide is antisense to the initiation codon, the coding region or the 5' or 3' intron exon junctions of a nucleic acid encoding braykinin bradykinin B2 receptor.

125. (Previously presented) The pharmaceutical composition of claim 109, wherein the antisense oligonucleotide comprises at least one mononucleotide is linked or modified by one or more of phosphorothioate, phosphorodithioate, methylphosphonate, phosphoramidate, boranophosphate, 3'-thioformacetal, triformacetal, carbamate, phosphotriester, formacetal, 2'-O-methyl, thioformacetal, 5'-thioether, carbonate, 5'-N-carbamate, sulfate, sulfonate, sulfamate, sulfonamide, sulfone, sulfite, sulfoxide, sulfide, hydroxylamine, methylene (methylimino), methyleneoxy (methylimino), methoxyethyl, C₅-substituted nucleotide and methyloxyethyl.